

### ABSTRACT

A multifilar antenna comprises  $n$  spaced antenna filaments, where  $n$  is an integer greater than 1; a matching circuit for matching the characteristic impedance of the antenna to that of a transmitting and/or receiving apparatus; a weighting circuit for applying gain and phase adjustments to signals passed to or from the  $n$  filaments; switch means associated with at least some of the filaments for selectively altering the electrical length and/or interconnections for the filaments; means for detecting electrical properties of the multifilar antenna with respect to the frequency, polarization and/or direction of propagation of a signal to be received or transmitted by the multifilar antenna and/or impedance matching of the antenna; and control means, responsive to the detecting means, for controlling the operation of the matching circuit, the weighting circuit and the switch means to adjust the properties of the multifilar antenna to suit better a current signal to be received or transmitted.